

## Amendments to the Specification

Please replace the paragraph beginning on page 2, line 18, with the following amended paragraph:

Illustratively, "loyal" customers, e.g., customers with frequent or repeated significant orders, bidders with better bidder ranking criteria, e.g., ~~higher eBay higher eBay® ratings~~, and customers with identifiably more elastic demands, etc., may be treated preferentially by awarding them a price discount. Similarly, mortgage customers or other borrowers with excellent credit ratings may be awarded a lower interest rate. Conversely, new, e.g., unknown customers, inflexibly rigid customers with stringent accommodation demands, or borrowers with lower credit ratings may represent to a business a higher costs or degree of risk in dealings with them. Such riskier or costlier customers may be discriminated against with higher interest rates, requiring premium prices, or in other handicapping ways.

Please replace the paragraph beginning on page 6, line 9, with the following amended paragraph:

These and other objects and advantages of the present invention will become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiments which are illustrated in the drawing figures.

Please replace the paragraph beginning on page 14, line 7, with the following amended paragraph:

With the estimated unknown elements of the market structure and other user inputs (e.g., the auction design candidates, evaluation criterion), the automatic decision support system 10 provides optimized auction design candidates based on the evaluation criterion provided such that maximized expected revenue or profit from the auction can be achieved. This means that the automatic decision support system 10 can be used to configure optimized auction parameters for a multiplicity of performance criteria. The structure and operation of the automatic decision support system 10 will be described in more detail below, also in conjunction with Figures 1 through 10.

Please replace the paragraph beginning on page 19, line 23, with the following amended paragraph:

For each bidder, the database contains a segment identity (ID). Alternatively, in another embodiment, further data on bidder-specific covariates that can be used for classifying the bidders and assigning segment identifiers. Some examples are ~~e-bay rating~~, consumer individual flexibility rating, credit worthiness, income, occupation, or residential locale, and other special individualized ratings.

Please replace the paragraph beginning on page 29, line 3, with the following amended paragraph:

a. a set of item(s) to be auctioned. (Example: { A Brand New 19 inch Ultra VGA ~~HP Monitor HP® Monitor~~, A Refurbished HP Kayak Desktop Computer with Intel Pentium III ~~Intel® Pentium® III~~ 850Mhz, ~~128M RAM~~ ~~128MB RAM~~, ~~40G hard disk~~ ~~40GB hard disk~~})

Please replace the paragraph beginning on page 31, line 5, with the following amended paragraph:

With reference to Figure 3, the Preference Policy Designer ~~Module~~ Designer ~~Module~~ 14 also has three submodules: a bidding Behavior Prediction Submodule 31, which receives an input from a ~~bidding model selection submodule~~ Bidding Model Selection Submodule 30, an Outcome Prediction Submodule 32, and an Optimal Decision Submodule 34.

Please replace the paragraph beginning on page 32, line 10, with the following amended paragraph:

As an example, suppose that historical auction data ~~repository~~ repository 11 contains data on past auctions of the specified item. Suppose also that in all of the past auctions the bidders belong to one of two segments with 5 bidders in each segment 1 and 3 bidders in segment 2. Some of these auctions are run under English format without a reserve price and without a preference policy, and some are run under a sealed-bid first-price format with a bid comparison rule  $\{T_1(B), T_2(B)\} = \{B, 1.20 B\}$ , e.g., bidders in segment 2 are favored by 20%. In this example, Bidding

Model Selection Module 21 retrieves two bidding models and passes to the Structure Estimation Submodule 22. These bidding models are

MODEL 1:  $\beta_j(V, \{\text{Format} = \text{English}, \text{Reserve Price} = 0\}, [2, (5, F_1, (a_1, b_1)), (3, F_2, (a_2, b_2))]) = V$  for all bidders  $j$

and

MODEL 2:  $\beta_j(V, \{\text{Format} = \text{Sealed Bid First Price}, \text{Reserve Price} = 0, \text{Bid Comparison Rule} = \{B, 1.20 B\}, [2, (5, F_1, (a_1, b_1)), (3, F_2, (a_2, b_2))]\}) = \psi_k(V)$  if  $j$  is in segment  $k$  ( $k=1,2$ ) where  $(\psi_1(V), \psi_2(V))$  is the obtained from the solution to the differential equation system described above.

Please replace the paragraph beginning on page 33, line 10, with the following amended paragraph:

In the case of sealed-bid first-price auctions this inversion is achieved as follows. For a bid comparison rule  $\{B, T(B)\}$ , the differential equation system (Eq. 1)-(Eq. 2) above is rewritten in the following equivalent form  
(Eq. 3)

$$V_1 = \beta + [G_1(b) G_2(\tau(b))] / [(n_1 - 1) G_2(\tau(b)) G_1'(b) + n_2 G_1(b) G_2'(\tau(b)) \tau'(b)]$$

(Eq. 4)

$$V_2 = \beta + [G_2(b) G_1(T(b))] / [(n_2 - 1) G_1(T(b)) G_2'(b) + n_1 G_2(b) G_1'(T(b)) T'(b)]$$

where  $\tau(b) = T^{-1}(b)$  and  $G_1(b)$  and  $G_2(b)$  are the distributions of bids for a bidder in segment 1 and segment 2, respectively. Equations (Eq. 3)-(Eq. 4) express the unobserved valuations in terms of observable bid distributions of bidders in the two segments.

Please replace the paragraph beginning on page 34, line 13, with the following amended paragraph:

In step 44, the Structure Estimation Submodule 22 outputs the estimated structure  $(F_1^*(V), F_2^*(V))$  to the Bidding Behavior Prediction submodule 31 and Outcome Prediction submodule 32 of the Preference Policy Designer Module 14 and to the Report Generator Module 16 Module 15, completing process 40.

Please replace the paragraph beginning on page 37, line 8, with the following amended paragraph:

With reference now to ~~Figure 18~~ Figure 8, the steps in a process 80 determine the optimal preference policy for an auction, in accordance with one embodiment of the present invention. Beginning with step 81, user inputs are received for evaluation criteria, candidate preference policies, and constraints, as discussed above (process 60; Fig. 6).

Please replace the paragraph beginning on page 37, line 27, with the following amended paragraph:

In step 86, The value ~~the value~~ of the evaluation criterion obtained is passed to the optimal decision submodule (optimal decision submodule 34; Fig. 3).

Please replace the paragraph beginning on page 38, line 6, with the following amended paragraph:

With reference to ~~Figure 19~~ Figure 9, the steps in a process 90 effectuate the determination and reporting of optimal preference policies, in accordance with one embodiment of the present invention. The steps of process 90 may, in one embodiment, be performed as discussed above (processes 40-90; ~~Fig.'s 4-9~~ Figures 4-9, respectively).

Please replace the paragraph beginning on page 40, line 6, with the following amended paragraph:

In one embodiment, bidder characteristics, auction outcomes and formats, and accompanying rules may be archived in, written to, retrieved from, and modified within a database (e.g., repositories 11 and 12; ~~Fig.'s 1 and 11~~ Figures 1 and 11). In one embodiment, the database may be deployed within computer readable medium 1000m.

Please replace the paragraph beginning on page 40, line 26, and ending on page 41, line 3, with the following amended paragraph:

In the present embodiment, system 1000 also optionally contains a display interface 1045 coupled to the bus 1001 for enabling incorporation of a display device 1046. Display device 1046 enables displaying information to users. In one embodiment, display interface 1045 may be a graphical user interface (GUI). In one embodiment, ~~display interface 105~~ interface 1045 enables an auction input interface. In one embodiment, aspects of display interface 1045 may be deployed within computer readable medium 1000m.

Please replace the paragraph beginning on page 41, line 10, with the following amended paragraph:

System 1000 also includes an optional cursor control or directing device (~~on-screen cursor control 1036~~ control 1035) coupled to bus 1001 via on-screen cursor control interface 1030, for communicating user input information and command selections to processor 1050. In one implementation, ~~on-screen cursor control 1036~~ control 1035 is a mouse, trackball, joystick or special keys on alphanumeric input device 1041 capable of signaling movement of a given direction or manner of displacement.

Please replace the paragraph beginning on page 41, line 17, with the following amended paragraph:

~~Input interface 1040 and cursor control 1036~~ control 1035 may both function, individually or in concert, as enabling mechanisms ~~of a auction of an auction~~ input.

Please replace the paragraph beginning on page 42, line 3, with the following amended paragraph:

The exemplary database herein contains information about past auctions and market participants. In one embodiment of the present invention, the following variables are observed for each auction in the database, as shown in Figure 11. Auction data includes the auction identification and other characteristics thereof. Information about the auctioned item includes its identity, its name, quantity, description, and other attributes. The market mechanism contains data about the

auction format, reserve price, preference policy, and other mechanism attributes. Bidders are identified by bidder and segment identity and other attributes. Bids are categorized by categorized by the identities of participating bidders and the bids submitted by them. Outcomes listed include assigned payments and quantities for each bidder. These are detailed in Figure 11.